

METHOD FOR FINISHING POLYSILICON OR AMORPHOUS SUBSTRATE STRUCTURES

ABSTRACT OF THE DISCLOSURE

According to the invention, a method for preparing multicrystalline substrates as “handle wafers” for subsequent bonding to “device layer” quality materials is disclosed. In one step, starting with a suitable substrate such as multicrystalline silicon, the substrate surface is prepared for layer transfers by using a novel CMP method in which, after a suitable period of polishing at elevated pH, a surfactant and rinse material is gradually introduced into the slurry to lower pH and remove wear materials from the slurry. In another step, a filler layer of polycrystalline silicon is transferred to the face of the polished substrate to a predetermined thickness, thus filling in surface defects remaining after the initial CMP step, and a subsequent CMP polishing step is performed. By these steps, multicrystalline substrates can be prepared with surface roughness of twenty Angstroms or less, which is suitable for defect-free bonding to device-layer materials in this embodiment.

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